

LIST OF LEPIDOPTERA COLLECTED BY DR. ERNST HARTERT
AND MR. FREDERICK YOUNG IN MOROCCO IN 1930.

BY LORD ROTHSCHILD, PH.D., F.R.S.

DR. ERNST HARTERT sent me the following notes on his 1930 trip to the Moroccan Atlas during which these Lepidoptera were taken.

“ On June 27th, 1930, I left London on the S.S. Moulton, one of the largest of the P. & O. steamers, of 21,000 gross tons, and arrived at Gibraltar on July 1st, after an exceptionally fine and quiet journey. The same day we left Gibraltar on a very small boat of the Bland Line for Casablanca, where we arrived the next morning. Again Mr. Frederick Young of the Tring Museum accompanied me. On July 3rd we went to Marrakesh. There we observed nothing new in birds, and all birds were in full moult; we did not see the small Moroccan Sand-Martin, *Riparia paludicola mauritanica*. Butterflies were not numerous, but the Copper, *Polyommatus* (or *Chrysophanus*) *phoebus*, was about as common as in May and June.

“ After getting the necessary written permission and a good car with an efficient chauffeur, we left early on the 7th to cross the Great Atlas. It was a very beautiful trip. The river, along which a great part of the road went, still contained running water, but much less than usually in the beginning of June, and most of the country had become rather dry. It seems peculiar to me that all along the river not a single *Motacilla alba subpersonata* occurs, and that no *Cinclus* live in this part. Altogether it is poor in birds, proper forests and big plains, as on the plateau of the Middle Atlas, being absent. In the afternoon we crossed the Tizi-N-Tichkan Pass and descended down the southern slopes of the Atlas. A few miles below the Pass is a belt of open, somewhat bare forest of *Callitris*, *Juniperus*, and *Quercus*, but without very tall oaks and without cedars. No butterflies were noticed in it, nor any interesting birds, but the striped Squirrel, *Atlantoxerus getulus*, was observed in small numbers. After passing the forest it became much more bare, and when arriving in the valley of Telouet (Glaoui country) we were rather disappointed, for the hills and mountains near by were very bare, some being actually bare rocks without any vegetation. In the valley are a few villages, among them the real Telouet with the grand old castle of the Pasha of the Glaoua. A couple of kilometres above is the new French Fort, out on the open stony plain, with about fifty men of the Foreign Legion, and the “ Bureau Arabe.” The officer of the latter, Lieutenant Tuder, Chef du Bureau des Affaires Indigènes, received us very kindly, gave us two bedrooms, and invited us to take the principal meals with him. There was only one other officer, Lieutenant Amilakrari, of the Foreign Legion, from the Caucasus, the Captain, Monsieur Gamez, arriving several days later.

“ Along the river valleys were gardens, some small fields and fruit trees. Of butterflies the most conspicuous were the many *Melanargia galathea meade-waldoi*, but along and in the gardens some *Lycænidæ* and other species were not rare, but there was no sign of *Zygænas* or of any of the rare *Satyrus* or other high mountain butterflies. Enormous numbers of a middle-sized Grasshopper and a few other species of *Orthoptera* inhabited the more fertile places. Gardens,

irrigated with water, conducted through narrow ditches from the river, did exceedingly well.

"The commonest bird was a short-billed Crested Lark, *Galerida theklae ruficolor*, which was seen in many places on the stony ground. Storks were feeding on the bare fields in numbers, *Neophron percnopterus* was once observed, a few *Milvus migrans migrans*. Kestrels here and there, *Oenanthe hispanica hispanica* and *Anthus campestris*. On the old castle *Hirundo rustica rustica* had nested, and in the gardens and villages one saw plenty of *Passer domesticus* and some *Serinus serinus*, *Hippolais pallida opaca* (rare!), *Emberiza striolata sahari*, *Carduelis cannabina*, *Muscicapa striolata*, Blackbirds, Goldfinches and a few Quails. *Streptopelia turtur arenicola* occurred in most village gardens, but not very numerous, while in April, we were told, thousands passed through. On steep rocks a few *Columba livia* nested, once an *Aquila bonellii*, and several times *Corvus corax tingitanus*, twice *Buteo rufinus cirtensis*, and once *Circus gallicus* were seen. Lieutenant Amilakrari took us to a fine valley, about two hours over an awful stony region, where *Alectoris barbara barbara* existed. Several, all much in moult, were shot, and as far as one can see they were true *barbara*. Twice several *Oenanthe leucura syenitica* were seen and one shot. In May or early June a flock of *Comatibis eremita* came up from the south and were feeding about an hour from Telouet, according to detailed description from the officers.

"Telouet or somewhere very near by must have been the place where Dodson shot the only known three specimens of *Rhodopechys sanguinea aliena*, but neither round the old castle nor anywhere else did I see a trace of them, and neither officers nor natives were able to give me any information about this very rare bird. Dodson said he got it at "the Glaoui," which is a fairly large district, but he slept at Telouet.

"We stayed a week at Telouet and then returned to Marrakesh. In Telouet the sun was shining all day, no clouds were seen during our stay there, and in the nights the full moon shone wonderfully, from about nine o'clock in the morning it became very hot and it was interesting to observe how the birds were seeking shade and came into the oasis gardens; even Crested Larks came into the gardens and stayed under the trees, and I have also seen them sitting on vines and branches. About or towards noon a westerly wind came up and blew till ten at night or later, sometimes very strong and hurricane-like. The nights were cooler and most delightful.

"On the return journey we stayed nearly two hours on the Tizi-N-Tiehkan Pass. Unfortunately sheep and cattle had been feeding there and had eaten much of the scanty vegetation, but Young found a spot on the east side where cattle could not get a foothold, and where there was a little stream of water and a bit of swampy ground. There butterflies were flying in numbers and among them the new subspecies of *Zygaena*. Marrakesh was very hot, while it had been hardly warmer there than on a hot summer day in England, before we went to Telouet.

"As soon as possible we left for Rabat, where we saw my old friend Théry. We then proceeded to El-Hajeb, passing a few hours in Meknès with Mr. Harold Powell. At El-Hajeb it had become too dry for *Zygaenas* and rarer lepidoptera, and very few moths came to the lights, though the nights were dark without any moonlight. We visited the rocks where the bare-necked Ibis, *Comatibis eremita*, nests, but they were no longer there, though a small flock flew round in

silence. As I had to be at home at the beginning of August we had very little more time, but went one day to Ifran. Ifran is a perfectly new French place in the Middle Atlas, reached (now) by motor-omnibus from Azrou. Hotel and restaurant are there and already in use, though neither was entirely finished. The way from Azrou to Ifran leads through very fine forests, chiefly of oaks, and some wonderful cedars, and we were very sorry that the motor-omnibus made no stops whatever. But near Ifran is also forest and there we caught a good number of butterflies, among them a few *Argynnis auresiana*. After Ifran we went for a day into the forests above Azrou. We had to take a Mokhrazni (Moroccan soldier) with us, but all was managed without much loss of time. We walked up over bare hills, where a large *Satyrus* was common, and then went down the steep road through the old forest. There we caught the rare *Argynnis tyauteyi*, also *Papilio podalirius lotteri* in perfectly fresh condition, and a number of other butterflies.

"We then returned to Rabat, which we left again on the 25th of July, and on the 28th we left Gibraltar, arriving at London on the 1st of August."

ERNST HARTERT.

1. *Papilio machaon maxima* Verity.

Papilio machaon maxima Verity, *Rhopalocera Palaearctica*, p. 296, pl. lii. f. 2 (1911) (gen. vern. : Tangier).

Papilio machaon maxima gen. aest. *angulata* Verity, l.e., p. 296, pl. lx. f. 14 (1911) (Tangier).

1 ♀ Ifrane, Middle Atlas, 20 July; 1 ♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

Both these ♀♀ are worn, but show the characters of gen. aest. *angulata* strongly.

2. *Papilio podalirius lotteri* Aust.

Papilio podalirius ab. *lotteri* Austaut, *Petites Nouvelles Entomologiques*, vol. ii, p. 293 (p. 304 nom. corr. *lotteri*) (1879) (Sidi-Bel-Abbès) (gen. aestiv.).

Papilio feisthameli forma *maura* Verity, l.e., p. 293, pl. i. ff. 7, 8 (1911) (gen. vern. ex Africa, Lambèze).

The 2 ♂♂ secured are true large summer brood *lotteri*.

2 ♂♂ above Azrou, 1,800 m. = 5,850 ft., 21 July.

3. *Ganoris rapae mauretanicus* (Verity).

Pieris rapae mauretanicus Verity, l.e., p. 155, pl. xxxii, ff. 43, 44 (gen. aest.); pl. xxxiv, ff. 15, 16 (gen. vern. *leucoteroides* Rothsch.) (1908) (Algeria, Morocco, Tunisia) (ff. and text Algeria) (xxxiv, 15, 16, as *leucotera* Stef.).

Pieris rapae mauretanicus gen. vern. *leucoteroides* Rothsch., *Bull. Soc. Scient. Nat. Maroc*, vol. v, p. 129 (1925) (Rabat, Morocco).

The whole series of 9 ♂♂, 8 ♀♀ is of the gen. aest. *mauretanicus*.

4 ♂♂, 2 ♀♀ Marrakesch, 6 and 14 July; 3 ♂♂, 2 ♀♀ Telouet, S. Slopes of Great Atlas, 1,900 m. = 6,175 ft., 8 July, the larger ♀ has the black spot above vein 1 of the forewing reduced to two almost obsolete dots on each forewing; 1 ♂ Tizi-n. Tichka, 2,450 m. = circa 8,000 ft., 12 July; 2 ♀♀ Asni, Great Atlas, S. of Marrakesch, 13 July; 1 ♂, 2 ♀♀ El Hajeb, W. Slopes of Middle Atlas, 19 July, one female has the dark tips to the forewings entirely absent.

4. *Leucochloë daplidice albidice* (Oberth.).

Picris daplidice var. *albidice* Oberthür, *Étud. d'Entom.* vi, p. 47 (Algérie, Prov. Constantine Sud).

All the series except 2 worn ♀♀ shows by the strong yellow wash on the hind-wings below that they are *albidice*, though not as distinct as most Algerian examples. 5 ♂♂, 4 ♀♀ Marrakesch, 5, 6 July; 4 ♀♀ Telouet, S. Slopes of Great Atlas, 1,900 m. = 6,175 ft., 8 and 11 July; 1 ♂ Asni, Great Atlas, S. of Marrakesch, 13 July.

5. *Euchloë charlonia* (Donzel).

Anthocharis charlonia Donzel, *Ann. Soc. Entom. France*, vol. xi, p. 197, pl. viii, f. 1 (1842) (Emsilah, Algeria).

1 ♂ Asni, Great Atlas, S. of Marrakesch, 13 July; the specimen is very poor.

6. *Colias electo croceus* (Geoff.).

Papilio croceus Geoffroy, in Fourcroy's *Entom. Par.* vol. ii, p. 250 (1785) (Paris).

1 ♂, 1 ♀ Marrakesch, 6 and 14 July; 2 ♂♂ Telouet, Great Atlas, S. Slopes, 1,900 m. = 6,175 ft., 10 July; 1 ♂ Taddert Valley of the R'dat, Great Atlas, 1,700 m. = 5,525 ft., 7 July; 1 ♂, 1 ♀ Ifrane, Middle Atlas, 20 July; 2 ♂♂, 1 ♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

7. *Gonepteryx cleopatra cleopatra* (Linn.).

Papilio cleopatra Linnaeus, *Syst. Nat.* edit. xii, pt. 2, p. 765, no. 105 (1767) (Barbaria).

2 ♂♂, 1 ♀ Asni, Great Atlas, S. of Marrakesch, 13 July; 1 ♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

8. *Gonepteryx rhamni meridionalis* Rüb.

Gonepteryx rhamni meridionalis Röber in Seitz, *Grossschmett.* vol. i, p. 61 (1907) (Algeria and S. Asia Minor).

1 ♂ Ifrane, Middle Atlas, 20 July.

9. *Vanessa polychloros erythromelas* Aust.

Vanessa polychloros var. *erythromelas* Austaut, *Le Naturaliste*, vol. vii, p. 142 (1885) (Scbdou).

The single specimen obtained is very small, and the dark borders of the wings are broader than usual, while the discal spots are small. Expanse 55 mm. 1 ♂ Ifrane, Middle Atlas, 20 July.

10. *Argynnis auresiana* Fruhst.

Argynnis adippe auresiana Fruhstorfer, *Intern. Entom. Zeitschr. Guben*, vol. ii, p. 69 (1908) (Aurès Mts.).

Fruhstorfer treated this very distinct insect as a subspecies of *A. adippe*, but I consider it is a good species. Dr. Hartert was too late this year for this species and only got 1 ♂, 1 ♀ very much damaged; and on his former expeditions he was too early and never got it.

1 ♂, 1 ♀ Ifrane, Middle Atlas, 20 July.

When a large series from Morocco comes to be examined, it is quite possible we may find the western form is somewhat different from the typical East Algerian race; but so far too few Moroccan examples have been taken.

Oberthür already remarked that the Morocco examples were smaller and the ♂♂ redder above than Algerian examples.

11. *Argynnis lyauteyi* Oberth.

Argynnis lyauteyi Oberthür, *Étud. Lépid. Comp.* Fasc. xvii Planches, *Expl. des Pl. Phot.* Pl. D. pp. 48, 49, Pl. D. Phot. (Upper 2 ff.) (1920) (Forêt d'Azrou, Middle Atlas).

This large and fine *Argynnis* is undoubtedly closely allied to *A. aglaja* (Linn.), but it is abundantly distinct. The pattern on the hindwing below and the green colour would cause many entomologists to classify it as a subspecies of *aglaja*; but without further evidence of intermediate races I prefer to consider it a distinct species. Dr. Hartert found it already on the wane and only obtained a few good specimens.

4 ♂♂, 4 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

12. *Argynnis lathonia* (Linn.).

Papilio lathonia Linnæus, *Syst. Nat.* edit. x, vol. i, p. 481, No. 141 (1758) (Europe).

The 4 specimens are very red, but agree well with many northern examples.

4 ♂♂ Ifrane, Middle Atlas, 20 July.

13. *Melitaea aetherie algerica* Rühl.

Melitaea aetherie var. *algerica* Rühl., *Palæarkt. Grossschmett.* p. 389 (1892-1895) (Algeria).

One worn ♀ was obtained.

1 ♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

14. *Satyrus alcyone maroccana* Oberth.

Satyrus alcyone maroccana Oberthür, *Étud. Lépid. Comp.* Fasc. xvii Planches, *Expl. des Pl.* Pl. C. p. 48, pl. C. Phot. (1920) (Forêt d'Azrou, Middle Atlas).

3 ♂♂ Ifrane, Middle Atlas, 20 July.

All 3 very large and dark.

15. *Satyrus briseis major* Oberth.

Satyrus briseis var. *major* Oberthür, *Étud. Entom.* Fasc. i, p. 27 (1876) (Boghari).

A nice series of fine large examples.

3 ♂♂ Tizi-n-Tichka, Great Atlas, 2,450 m. = circa 8,000 ft., 12 July; 2 ♂♂, 1 ♀ Ifrane, Middle Atlas, 20 July; 2 ♂♂, 8 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft.

16. *Satyrus actæa simillima* subsp. nov.

Oberthür united this with *actæa nevadensis* Ribbe from the Sierra Nevada in Spain; but it is much darker both in ♂ and ♀ and has the blackish strigillation below more pronounced and denser.

1 ♀ Type El Hajeb, Middle Atlas, W. Slopes, 19 July. In addition to this specimen there are in the Tring Museum 3 ♂♂, 1 ♀ collected by E. G. B. Meade-Waldo at Tsauritz Entsagautz and Tizi gourza, and 6 ♂♂, 1 ♀ from coll. Vaucher: Glaoui = Telouet.

17. *Melanargia galathea meade-waldoi* Rothsch.

Melanargia galathea meade-waldoi Rothsch., *Nov. Zool.* vol. xxiv, p. 110, no. 54A (Tamarouth, Morocco).

Among the considerable series of 28 ♂♂, 25 ♀♀, 1 ♂ from Ifrane has on both upper- and underside a large amount of the black colour absent and the wings are of a curious quadrangular shape.

20 ♂♂, 16 ♀♀ Telouet, Great Atlas, 1,900 m. = 6,175 ft., 9 July; 7 ♂♂, 5 ♀♀ Tizi-n-Tichka, Great Atlas, 2,450 m. = circa 8,000 ft., 12 July; 1 ♂, 4 ♀♀ Ifrane, Middle Atlas, 20 July.

18. *Parage megera megera* (Linn.).

Papilio megera Linnaeus, *Syst. Nat.* edit. xii, vol. i, pt. ii, p. 771, no. 142 (Austria, Dania) (1767).

1 ♂ Marrakesch, 4 July; 1 ♀ Telouet, S. Slopes, Great Atlas, 1,900 m. = 6,175 ft., 10 July.

19. *Epinephele lycaon mauretanica* (Oberth.).

Satyrus endora var. *mauretanica* Oberthür, *Étud. Entom.* vi, p. 58 (1881) (Seb dou, Lambèze).

1 ♀ Ifrane, Middle Atlas, 20 July.

20. *Epinephele maroccana* Blach.

Epinephele lycaon var. *maroccana* Blachier, *Ann. Soc. Entom. France*, vol. lxxvii, p. 216, pl. iv, f. 5 (1908) (Moroccan Atlas).

Because the late Monsieur Ch. Blachier in describing this very distinct species placed it as a subspecies under *Ep. lycaon*, Oberthür says the name *maroccana* must be deleted from our lists and his name *nirelli* substituted, although the latter was published 12 years later. This is impossible under the acknowledged rules of nomenclature, so I here replace the correct name.

The pair taken are very typical, though not in first-class condition.

1 ♂, 1 ♀ Tizi-n-Tichka, Great Atlas, 2,450 m. = circa 8,000 ft., 12 July.

In addition to this pair there are in the Tring Museum 2 ♂♂ collected by E. G. B. Meade-Waldo at Tsauritz Entsagautz; and 1 ♂ from coll. Vaucher: Glaoui = Telouet (paratype).

21. *Epinephele jurtina jurtina* (Linn.).

Papilio jurtina Linnaeus, *Syst. Nat.* edit. x, vol. i, pt. ii, p. 475, no. 104 (1758) (Europe, Africa, Type Africa).

1 ♂, 2 ♀♀ Telouet, S. Slopes, Great Atlas, 1,900 m. = 6,175 ft., 10 July; 1 ♂ Ifrane, Middle Atlas, 20 July; 5 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July; 1 ♂, 2 ♀♀ El Hadjeb, W. Slopes of Middle Atlas, 19 July.

22. *Epinephele ida ida* (Esp.).

Papilio ida Esper, *Schmett.* vol. i, pt. 2, p. 184, no. 176, pl. xcii, f. 2 (cont. xlii) (1777) (Pyrénées).

1 ♂ Asni, S. of Marrakesch, 13 July; 5 ♂♂ Taddert, Valley of the R'dat, Great Atlas, 1,700 m. = 5,525 ft., 7 July; 8 ♂♂ El Hadjeb, W. Slopes of Middle Atlas, 19 July.

23. *Coenonympha pamphilus lyllus* (Esp.).

Papilio lyllus Esper, *Schmett.* vol. i, pt. 2, *Forts.* p. 23, no. 244, pl. cxxii (cont. 77), ff. 1, 2 (1805) (Portugal).

It is strange that although the whole series of 10 ♂♂, 10 ♀♀ are undoubtedly summer generation, yet a number of them show a mixed coloration on the underside of the hindwings.

2 ♂♂, 1 ♀ Ifrane, Middle Atlas, 20 July; 7 ♂♂, 5 ♀♀ El Hajeb, W. Slopes of Middle Atlas, 19 July; 1 ♂, 4 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

24. *Thecla ilicis mauretanicus* Stdgr.

Thecla ilicis var. *mauretanicus* Standinger, *Iris*, vol. v, p. 279, no. 11 (1892) (Tunis).

11 ♂♂, 6 ♀♀ Ifrane, Middle Atlas, 20 July; 2 ♂♂, 2 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft.; 21 July; 1 ♂ locality lost.

25. *Chrysophanus phloeas phloeas* (Linn.).

Papilio phloeas Linnaeus, *Faun. Succ.* edit. alt. p. 285 (1761) (Sweden).

16 ♂♂, 8 ♀♀ Marrakesch, 4-14 July; 3 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July.

26. *Chrysophanus alciphron heracleana* Blach.

Chrysophanus alciphron var. *heracleana* Blachier, *Ann. Soc. Entom. France*, vol. lxxvii, p. 217 (1908) (Moroccan Atlas).

In the ♂ there is no trace of violet suffusion except very slightly along the costa and at the extreme base of the wings. In the ♀ there is less orange on hindwing than in *A. gordius* and *a. granadensis*, but a purple band between the 2 rows of postmedian black spots.

1 ♀ (slightly damaged) Tizi-n-Tichka, Great Atlas, 2,450 m. = circa 8,000 ft., 12 July.

27. *Chrysophanus phoebus* Blach.

Chrysophanus phoebus Blachier, *Bull. Soc. Entom. France*, 1905, p. 212 (Moroccan Atlas, Ourika).

128 ♂♂, 42 ♀♀ Marrakesch, 4-14 July; 1 ♂ has the spots on hindwing coalescing into streak.

28. *Lampides (Polyommatus) boeticus* (Linn.).

Papilio boeticus Linnaeus, *Syst. Nat.* edit. xii, vol. i, pt. 2, p. 789, no. 226 (1767) (Barbaria = Algeria).

4 ♂♂, 2 ♀♀ Marrakesch, 5 and 6 July.

29. *Tarueus theophrastus* (Fabr.).

Hesperia theophrastus Fabricius, *Entom. Syst.* vol. iii, p. 281, no. 82 (1783) (Morocco).

7 ♂♂, 5 ♀♀ Marrakesch, 6-13 July; 1 ♂, 1 ♀ Asni, Great Atlas, S. of Marrakesch, 13 July.

In Nov. Zool. xxxv (1929), p. 226, under no. 32, I stated that Zoudj-el-Beghal was in the extreme WEST of Morocco; it is, however, in the extreme EAST of Morocco.

30. *Lycaena icarus celina* Aust.

Lycaena celina Austaut, *Pet. Nouv. Entom.* vol. ii, p. 293, no. 212 (1879) (Sidi-bel-Abbès).

4 ♂♂, 2 ♀♀ Marrakesch, 4-6 July; 11 ♂♂, 2 ♀♀ Telouet, S. Slopes of Great Atlas, 1,900 m. = 6,175 ft., 10 July; 1 ♂♂, 4 ♀♀ Asni, Great Atlas, S. of Marrakesch, 13 July; 12 ♂♂, 3 ♀♀ Ifrane, Middle Atlas, 20 July; 3 ♂♂, 3 ♀♀ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July; 4 ♂♂, 2 ♀♀ Marrakesch, 4 July.

31. *Lycaena astrarche calida* Bell.

Lycaena agestis var. *calida* Bellier, *Ann. Soc. Entom. France*, série 4, vol. ii, p. 615, no. 2 (1862) (no locality).

Twenty out of the twenty-two specimens are true *calida* with short rounded wings and complete subterminal bands of large rufous spots, but two are almost typical *astrarche* with long pointed forewings and only the tornal half of the submarginal row of spots present on the forewing.

1 ♂ Tizi-n-Tichka, Great Atlas, 2,450 m. = circa 8,000 ft., 12 July (*astrarche* like); 1 ♂ Ifrane, Middle Atlas, 20 July, intermediate; 14 ♂♂, 2 ♀♀ Marrakesch, 5-14 July (typical *calida*); 1 ♂, 2 ♀♀ El Hadjeb, W. Slopes of Middle Atlas, 19 July.

32. *Lycaena bellargus punctifera* Oberth.

Lycaena bellargus punctifera Oberthür, *Étud. Lépid. Comp.* fasc. iv, pt. i, pp. 268, 269 (1910) (Algeria).

1 ♂ (worn) Ifrane, Middle Atlas, 20 July.

33. *Lycaena allardi ungemachi* (Rothsch.).

Lycaena allardi ungemachi Rothschild, *Bull. Soc. Scient. Nat. Maroc*, vol. v, p. 333, no. 46 (1925) (Asekla, Great Atlas).

1 ♀ (very poor) Taddert, R'dat Valley, Great Atlas, 1,700 m. = 5,525 ft., 7 July.

34. *Lycaena hylas atlantica* Elw.

Lycaena hylas atlantica Elwes, *Trans. Entom. Soc. London*, 1905, p. 380, no. 53 (Imentala, 5,500 ft.).

1 ♂ Ifrane, Middle Atlas, 20 July.

35. *Lycaena lysimon* (Hübner).

Papilio lysimon Hübner, *Samml. europ. Schmett.* vol. i, p. 46, no. 10, pl. 105, figs. 534, 535 (1805) (Portugal).

14 ♂♂, 3 ♀♀ Marrakesch, 3-6 July.

36. *Adopoea thaumas* (Hufn.).

Papilio thaumas Hufnagel, *Berl. Mag.* vol. ii, p. 62 (1766) (Berlin).

3 ♂♂, 1 ♀ Ifrane, Middle Atlas, 20 July.

37. *Adopoea acteon* (Rott.).

Papilio acteon Rottemburg, *Naturf.* vol. vi, p. 30, no. 18 (1775) (Landsberg a.d. Warthe).

1 ♂ Tizi-n-Tichka, Great Atlas, 2,450 m. = 7,963 ft., 12 July.

38. *Adopoea hamza* (Oberth.).

Hesperia hamza Oberthür, *Étud. d'Entom.* fasc. i, p. 28, pl. iii, ff. 2A, B (1876) (Oran).

1 ♂ El Hadjeb, W. Slopes of Middle Atlas, 19 July.

39. *Hesperia onopordi* Ramb.

Hesperia onopordi Rambur, *Faune Andal.* p. 319, no. 4, pl. viii, f. 13 (1842) (Granada).

6 ♂♂, 1 ♀ Telouet, S. Slopes of Great Atlas, 1,900 m. = 6,175 ft., 9-10 July ;
1 ♂ above Azrou, Middle Atlas, 1,800 m. = 5,850 ft., 21 July ; 1 ♀ much worn,
Ifrane, Middle Atlas, 20 July.

40. *Zygaena aurata blachieri* subsp. nov.

This beautiful form was taken on Tizi-n-Tiehka, thus making it almost certain that nearly every peak of the Great Atlas has a special form of *Z. aurata*, as *Z. aurata aurata* Bloch. occurs on Tsaouritz Entsaigauz and Tizigourza, while *Z. aurata opaca* occurs on Amsmiz.

♂♀ differ from *a. aurata* and *a. opaca* at first sight by the intense ruby-crimson of the red portions ; it resembles *a. opaca* more in the decided green, not greenish-golden colour of the forewings, and in the more extended black thorax and the larger size and broader wings. It differs from both in the longer antennae in the ♂ and in the larger size and greater distinctness of the red markings on the forewings. The green of the forewings is paler and brighter than in *a. opaca* and has a very intense metallic gloss.

4 ♂♂, 3 ♀♀ (type ♂) Tizi-n-Tiehka, Great Atlas, 2,450 m. = 7,963 ft., 12 July.

41. *Zygaena orana harterti* Rothsch.

Zygaena harterti Rothschild, *Bull. Soc. Scien. Nat. Maroc*, vol. v, p. 338, no. 76 (1925) (Azrou).

1 ♂ Tizi-n-Tiehka, Great Atlas, 2,450 m. = circa 7,700 ft., 12 July.

42. *Laphygma exigua* (Hüb.).

Noctua exigua Hübner, *Samml. Europ. Schmett.* Lepid. iv, Noet. ii, iii, genuinae D. etc. f. 362 (1805) (locality ?).

1 ♂ El Hadjeb, W. Slopes, Middle Atlas, 19 July.

43. *Eublemma jucunda* (Hüb.).

Noctua jucunda Hübner, *Samml. Europ. Schmett.* Lepid. iv, Noet. iii, Semigeom. D. etc. nos. 486 and 492 (1805) (locality ?).

1 ♀ Ifrane, Middle Atlas, 20 July.

44. *Catocala nymphaea* (Esp.).

Phalaena Noctua nymphaea Esper, *Schmett.* vol. iv, pl. 105 (*Noct.* 26), no. 4, p. 358, no. 52 (*Europ. Heter.* no. 189) (1786) (Lyons, Devillers coll.).

1 ♂ El Hadjeb, W. Slopes of Middle Atlas, 19 July.

45. ***Sterrhia numidaria*** (Luc.).

Acidalia numidaria Lucas, *Expl. Scient. Algérie, Anim. Artific.* vol. iii, p. 395, no. 141, Lépid. pl. iv, f. 2 (1849) (Constantine).

2 ♂♂ Telouet, S. Slopes of Great Atlas, 1,900 m. = 6,175 ft., 8 July.

46. ***Anaitis efformata*** Guen.

Anaitis efformata Guenée, *Spec. gén. Lépid.* vol. x, *Uran. et Phal.* vol. ii, p. 500, no. 1730 (1858) (Syria).

1 ♂ El Hadjeb, W. Slopes of Middle Atlas, 19 July.

47. ***Metasia ibericalis*** Rag.

Metasia ibericalis Ragonot, *Ann. Soc. Entom. France*, vol. lxiii, p. 170, no. 263 bis (1894) (Cuenca Castille).

1 ♀ El Hadjeb, W. Slopes of Middle Atlas, 19 July.
